Cervical Cancer
Screening and Management
In the Era of Robots, Vaccines, and the ACA

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Disclosure

- Speaker for Merck
  - Gardasil

- Speaker for Hologic
  - Thin Prep and Cervista
Objectives

- To understand the staging of cervical cancer
- To understand the surgical treatment of cervical cancer
- To understand management of locally advanced cervical cancer
- To understand the multidisciplinary nature of cervical cancer care
Cervical Cancer: Real Disease that happens to Real Women
Cervical Cancer Statistics

- Approximately 500,000 new cases/year\(^1\)
- Majority are in countries where no screening is possible or offered
- Majority are in countries where no treatment is possible or offered
- Approximately 250,000 deaths/year

US Cervical Cancer Statistics

- Approximately 12,710 new cases/year\(^1\)
- Approximately 4,290 deaths/year\(^1\)
- Approximately 10 million cases of HPV infection without cytologic abnormalities\(^2\)
- Approximately 1 million cases CIN 1\(^2\)
- Approximately 300,000–700,000 cases of CIN2/3
- Direct cost of prevention and treatment of cervical cancer is $6 billion annually in the US

\(^1\) CA: A Cancer J for Clinicians 2011.
Radical Hysterectomy is the defining surgical procedure of the gynecologic oncologist

- What is it?
- Who can have it?
- How is it different?
Treatment of CACX

- **Stage I:** limited to cx
- **Stage II:** beyond cx
- **Stage III:** extending as far as it can
- **Stage IV:** involving other organs

Clinical Staging

![Progression of Cervical Cancer](image-url)
Surgical treatment CACX

- Stage IA-1
- Stage IA-2
- Stage IB-1
- Stage IB-2
- Stage IIA
Stage IA-1

- Micro-invasive
- <3mm deep
- <5mm horizontal spread
- Often identified with treatment for CIN3

Treatment

- “simple hysterectomy”
- “cold knife” cone (fertility sparing option)
- (vaginal, TLH, LAVH, TAH)
Radical Hysterectomy Candidates

- **Stage IA-2**
  - >3mm invasion, <5mm invasion
  - <7mm horizontal spread
  - No gross lesion

- **Stage IB-1**
  - Gross lesion
  - Larger than 1A-2
  - < 4 cm
Previously Surgical Candidates

- IB-2
  - $>4 \text{ cm, } <10 \text{ cm}$
  - Clinically staged

- IIA
  - Involving fornix
  - Small lesion
The Surgery

- Uterine artery at its origin
- Tunnel ureters
- Parametria
- Upper vagina
- Lymph node dissection
Surgical Morbidity

- Increased operative time
- Increased blood loss
- Urologic injury
- Neurogenic bladder
- Neurogenic rectum
- Thromboembolic events
- Limitations posed by BMI
Why stop at 4cm?

- Limitations of exam
- Risk of nodal metastases
- Risk of need for adjuvant therapy
Isn’t more treatment always better?

NO
Radiation
Multidisciplinary Management

- “Chemo-Beamo”
- Radiation
- Sensitizing chemotherapy
Multidisciplinary Management

- Chemotherapy enhances the effect of radiation
- Brachytherapy delivers the “crowning blow” to the central disease
- Remember, $1/R^2$
Multidisciplinary Management

- Surgical candidate?
- Coordination of services
- Monitoring of response and tolerance
- Coordinated brachytherapy treatment
- Surveillance
- Use of tumor conference setting
Multidisciplinary Management

- Gyn onc
- Rad onc
- Med onc
- Pathology
- Radiology
- Physicist
- Pharmacist
- Geneticist
Success

- Stage IA: 93%
- Stage IB: 80%
- Stage II: 58-63%
- Stage III: 32-35%
- Stage IV: 15-16%

- 250,000 deaths per year worldwide
Screening

- Prior to screening 30-40 cases/100,000
- Now 5-8/100,000
- Changing the epidemiology of the disease
  - Well educated, healthy and insured
- Changing the lesion we are screening
  - Have picked up prevalent disease
  - Now looking for incident disease
  - Smaller lesions
Changing Epidemiology
Papanicolau to zur Hausen
Chocolate Consumption, Cognitive Function, and Nobel Laureates

Messerli, NEJM 367;16 October 18, 2012

$r = 0.791, P < 0.0001$
### 2012 Cervical Cancer Screening Guidelines

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>&lt; 21 Years</td>
<td>• No routine speculum exam or cytology regardless of age of onset of intercourse or other risk factors. • STD testing and counseling on safe sex and contraception as needed.</td>
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<tr>
<td>21-29 Years</td>
<td>• Annual pelvic exam AND • Screening with cytology alone every 3 years is recommended</td>
</tr>
<tr>
<td>30-65 Years</td>
<td>• Annual pelvic exam AND screening with • Cytology and HPV testing (&quot;co-testing&quot;) every 5 years (preferred) OR • Cytology alone every 3 years (acceptable) is recommended.</td>
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<tr>
<td>&gt; 65 Years</td>
<td>• Women with three consecutive negative cytology tests OR • Two consecutive negative co-tests within the last 10 years and with the most recent test in the past 5 years AND • No history of CIN2+ within the last 20 years</td>
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</tbody>
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Cervical Cancer Screening

- Public health concept
- Screening is for ASSYMPTOMATIC pts
- For a sufficiently common disease
- With a sufficiently long pro-drome
- With a sufficiently reasonable potential intervention
1 out of 6 women (15%) who are HPV positive and Pap negative will develop ASC-US+ within 5 years\(^1\)

Why Are HPV 16/18 Important?

> 75% of Squamous Cancers in the United States Are Caused by HPV 16/18

**Proportion of Cancers Associated with HPV Types**

<table>
<thead>
<tr>
<th>HPV Types</th>
<th>Cumulative Prevalence</th>
<th>Incremental Prevalence</th>
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<tbody>
<tr>
<td>16 alone</td>
<td>54.7%</td>
<td></td>
</tr>
<tr>
<td>16 + 18</td>
<td>76.4%</td>
<td></td>
</tr>
<tr>
<td>+ 35</td>
<td>83.7%</td>
<td></td>
</tr>
<tr>
<td>+ 31</td>
<td>87.6%</td>
<td></td>
</tr>
<tr>
<td>+ 33</td>
<td>91.0%</td>
<td></td>
</tr>
<tr>
<td>+ 45</td>
<td>93.6%</td>
<td></td>
</tr>
<tr>
<td>+ 52</td>
<td>94.2%</td>
<td></td>
</tr>
<tr>
<td>+ 58</td>
<td>94.4%</td>
<td></td>
</tr>
<tr>
<td>+ 59</td>
<td>94.5%</td>
<td></td>
</tr>
</tbody>
</table>

In women ≥ 30 years of age, 10-year cumulative incidence of ≥ CIN 3 was 20% and 18% for HPV 16 and 18, respectively.

Affordable Care Act

- Need to exploit the value of Negative Predictive Value (NPV)
- Need to focus resources on those at highest risk
- Need to do the best test possible at the least frequent safe interval
- 6 billion is being spent annually to prevent and treat cacx
Cervical Cancer Prevention: Get with the times…

“This dial phone has always worked for me…”

“My patients would never be able to understand a more modern test…”
Vaccination

- Vaccine FDA approved 2006
- 3 shot series
- 9-26, BOYS AND GIRLS
- FDA approved for:
  - Cervical cancer and precursors
  - Vulvar cancer and precursors
  - Vaginal cancer and precursors
  - Anal cancer and precursors
  - Penile cancer precursors
Vaccination

➢ Underutilized
  ● 50% (ranges 20-65%) for one dose
  ● 30-35% for all 3

➢ Highly effective
  ● 98-100% efficacious

➢ Safe

➢ Long lasting

➢ May see indication for other cancers
Australian Experience

School based vaccination program, 83% uptake

Young women

Young men

Suggests some element of herd immunity

British Medical Journal, April, 2013
What can WE do?

- Acknowledge that it is a prevalent problem
- Embrace primary prevention
- Engage secondary prevention
- Improve treatment
How can we do this?

- Appreciate HPV as a ubiquitous virus
- Understand that we are learning more each day
“My patient is not at risk”

- HPV is ubiquitous virus
- Risk assessment does not work
  - HIV
  - Hep B
  - HPV vaccination
How can we do this?

- Vaccinate
“My patient is not at risk”

- Wife of Korean WHO Chief
- 4J school teachers
- Librarians, nurses
- The girl next door
- Anesthesiologists
- Social workers
How can we do this?
Many Faces of Cervical Cancer
Thank You